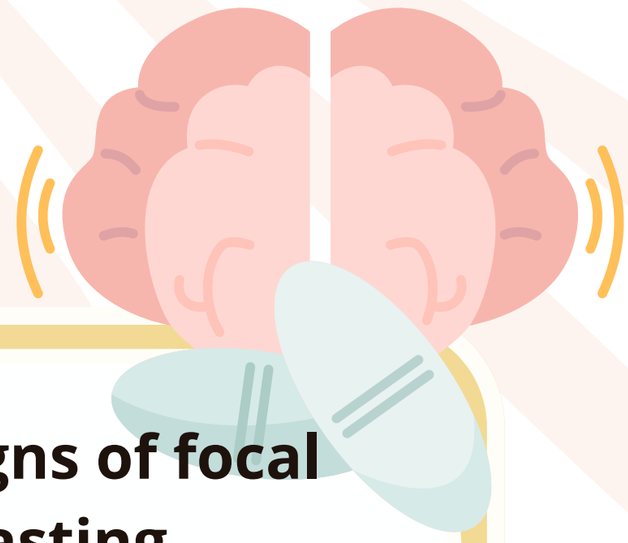
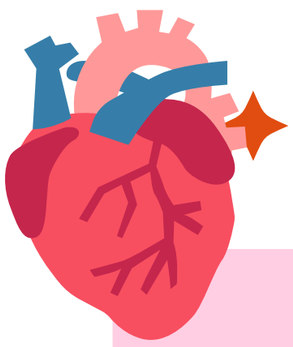
FCPI STAT DOSE

Stroke

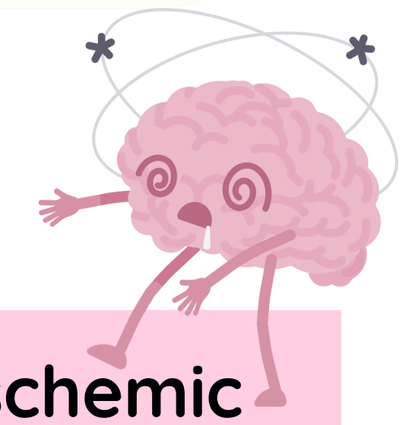


Stroke is defined as “Rapidly developing clinical signs of focal (or global) disturbance of cerebral function, lasting significantly more than 24 hours or leading to death, without apparent cause besides that of vascular origin”



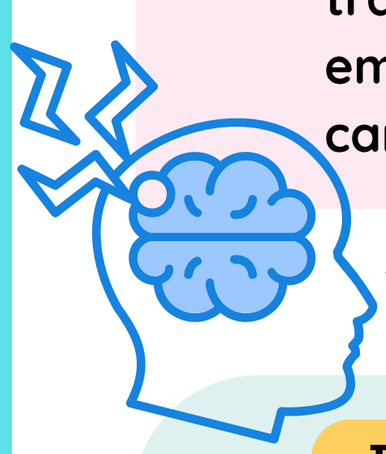
Types

These processes may result in 3 main forms of parenchymal diseases of brainforms.



Ischemic Stroke	Haemorrhagic Stroke	Transient Ischemic Stoke

• Occlusion of blood vessels from thrombus embolism or conditions that produce low systemic perfusion pressure
• It is of 2 types
  ◦ Thrombotic- blood clot occurs on brain itself
  ◦ Embolic- blood clot formed in heart, travels to brain as embolus and it blocks carotid artery.
	• Rupture of blood vessels with abnormal bleeding into extra vascular area of brain.
	• It is of 2 types
	  ◦ Hemorrhage in mental performance parenchyma (Intracerebral hemorrhage).
	  ◦ Hemorrhage in the subarachnoid space (Subarachnoid hemorrhage).
		• TIA, or transient ischemic attack, is really a “minor or mini stroke” that develops each time a blood clot blocks an artery for a brief time.
		• “Warning strokes” that will happen before a major stroke Occur when blood flow through a brain artery is blocked.
		• Symptoms are temporary but just like those of a full [stroke].



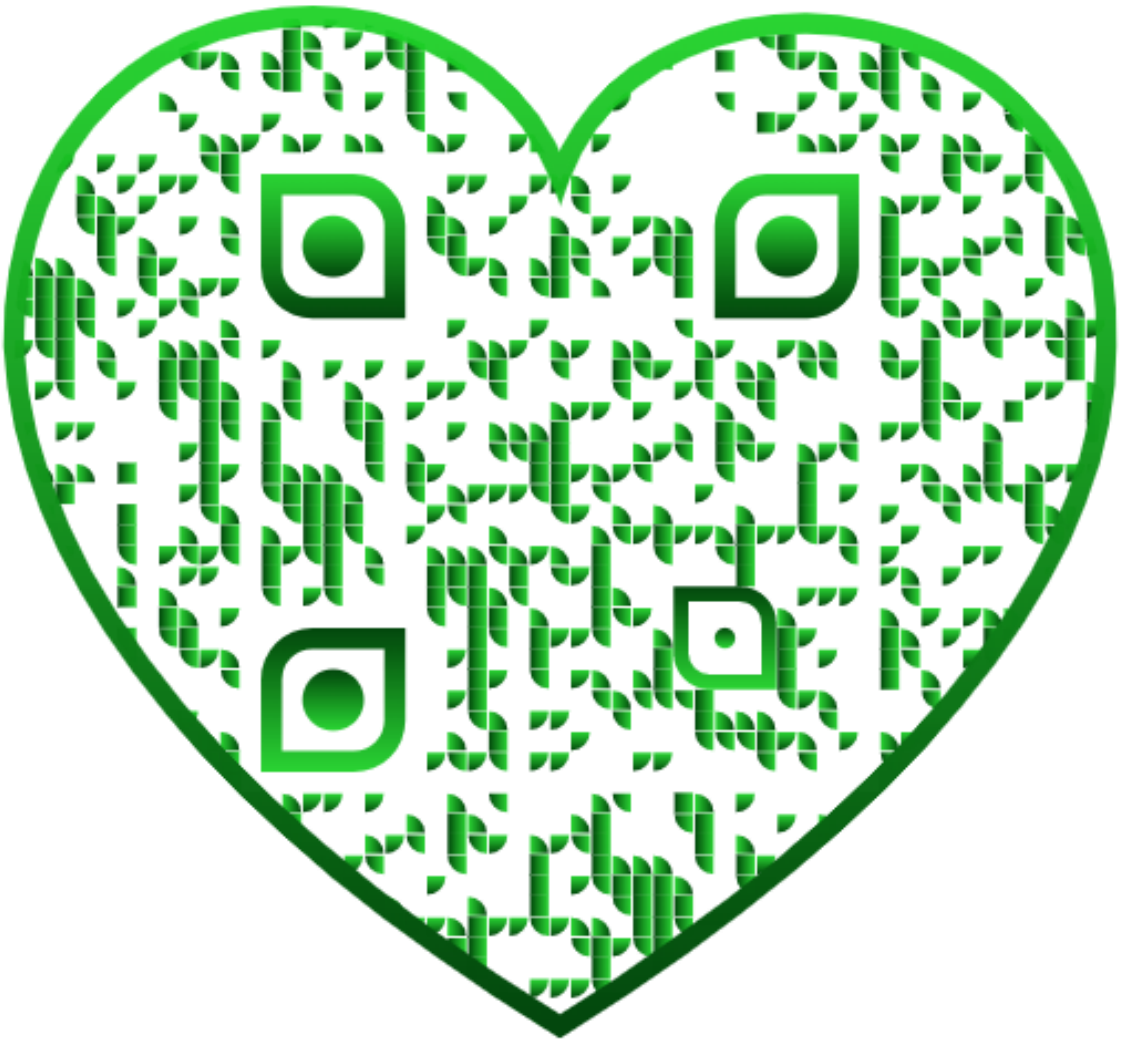
ISCHEMIC STROKE

- Sudden Numbness or Weakness
- Confusion or Trouble Speaking
- Visual Disturbances
- Dizziness or Loss of Balance
- Severe Headache

HEMORRHAGIC STROKE

- Sudden Severe Headache
- Nausea and Vomiting
- Loss of Consciousness
- Weakness or Paralysis
- Seizures

Signs & Symptoms



FCPI STAT DOSE

PATHOPHYSIOLOGY

1 Vascular and Predisposing Factors:

- Stroke risk is influenced by vascular factors and general triggers like pregnancy and stress.
- Sometimes, a clear cause like neck trauma can be identified.
- Often, no solid cause is found; mechanisms remain unclear for certain factors.

2 Coagulation and Vascular Inflammation:

- Theories suggest coagulation cascade and vascular inflammation contribute to stroke.
- Leukocytosis and elevated inflammatory markers indicate poor prognosis in acute stroke.

3 Hypoxic Injury Mechanism:

- The brain is highly vulnerable to hypoxic injury due to high glutamate and metabolic activity. Cerebral vascular occlusion from emboli or thrombus leads to rapid neurological effects.
- Permanent injury depends on the site, cellular vulnerability, and lesion extent.

4 Emboli Origin and Occlusion Impact:

- Emboli typically originate from the left atrium, left ventricle, or carotid artery.
- Timing of permanent injury varies, influenced by the injury site and lesion extent.

5 Vascular Response to Injury:

- Vascular response, like the presence of nitric oxide, affects stroke outcome.
- Early blood flow recovery can reduce damage; tPA is used but has limited eligibility. (tPA use is restricted due to side effects, including hemorrhage and blood-brain barrier damage)

6 Tissue Viability and Blood Flow Restoration:

- Uncertainty exists about tissue rescue when blood flow is not restored.
- Brain tissue may remain viable for hours after occlusion; rapid restoration is crucial.

Khan F, Tiwari A, Gaur K. Role of pharmacists in patient counseling: A review. Pharma Innovation Journal. 2018;7(7):507-510.

Management

Rapid Management:

- Critical for determining outcomes; brain tissue at risk of death within hours of ischemia.
- Core infarction tissue typically dies, but surrounding tissue can be preserved with proper management.
- Key factors: hemodynamic stability, proper oxygenation, and metabolic factors.

Initial Management:

- Stabilize the patient.
- Identify factors contributing to potential negative outcomes.
- Assess eligibility for thrombolysis therapy.

Acute Intervention in Ischemic Stroke

Dual Antiplatelet Therapy (DAPT)	• Dual antiplatelet treatment has been shown to lower the risk of recurrent stroke as compared with aspirin alone when treatment is initiated early (≤24 hours) after an acute mild stroke. • Aspirin plus Clopidogrel recommended commonly with a loading dose followed by long/short term maintenance dose.
Heparin	•Unfractionated intravenous heparin should not be used routinely in acute ischemic stroke — •But it may be considered in select stroke groups at high risk for early recurrent ischemic events (ie, patients with atrial fibrillation or acute myocardial infarction and large mural thrombi).
Thrombolytic Therapy	• The use of thrombolytic therapy (alteplase recombinant) in the 4.5 hours of onset of symptoms is proved to significantly improve outcomes.

Stroke Prevention

SECONDARY PREVENTION

- **Initiate as soon as possible after admission.**
- **Focus on lifestyle and behavioral changes: smoking cessation, reducing salt intake, alcohol cessation, weight loss, and exercise.**

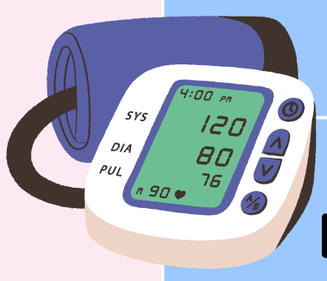
LONG-TERM TREATMENT

- **Aspirin is prescribed for long-term therapy to prevent further strokes.**

FCPI STAT DOSE

Acute Intervention in Ischemic Stroke

Blood Pressure Management	• Medications such as labetalol or nicardipine are used to control hypertension.
Reversal of Anticoagulation	• If the patient was on anticoagulants, reversal agents like protamine sulfate (for heparin) or vitamin K (for warfarin) may be needed.



Surgical Interventions

Ischemic Stroke

Mechanical Thrombectomy: This procedure involves the removal of a blood clot using a catheter and is typically performed within 6-24 hours of symptom onset.

Hemorrhagic Stroke

Surgical Hematoma Evacuation: For large or symptomatic hemorrhages, surgical removal of the blood clot may be required.

Aneurysm Clipping or Coiling: If the hemorrhagic stroke is due to an aneurysm, clipping or endovascular coiling may be performed to prevent rebleeding.

Decompressive Craniectomy: In cases of severe brain swelling, part of the skull may be removed to relieve pressure.

FCPI STAT DOSE

Complications After Stroke

General Complications	Large Stroke Complications	Prevention and Management
• Fever, hyperglycemia, and hypertension are linked to poor outcomes. • Control high glucose levels; treat fever with paracetamol. • Avoid early blood pressure control due to potential negative effects of antihypertensives.	• Swelling, edema, and herniation are often fatal with no approved treatments. • DVT, pulmonary embolism, and other thromboembolic diseases are common without proper prophylaxis.	• Compression stockings' effectiveness in stroke patients is not well established. • Use stockings, hydration, aspirin, and early mobilization. • Avoid urinary catheters due to high infection rates.

Rehabilitation

Physical Therapy:
- Includes exercises to improve mobility, strength, and coordination.

Occupational Therapy:
- Focuses on helping patients return to daily activities and improve fine motor skills.

Speech-Language Pathology:
- Assists with speech, language, and swallowing difficulties.

Benefits
- Proper rehabilitation reduces morbidity and mortality risk and shortens admission times.

Krishnaiah VS, Singh K. Cerebrovascular accidents (stroke): Types and its medical management. ResearchGate. 2023 Jan.